

DS610CU

Service Manual

Version 1.0

Avision Inc.

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1. INTRODUCTION

1.1 General Notes for Servicing

1.2 General Description

1.3 Features

This manual is intended to be used by the maintenance engineers. It describes areas to be maintained, the detailed installation, the disassembly of optional ADF , and the component replacement procedures as well as the main trouble shooting guides.

Please take your time to read this manual thoroughly to obtain comprehensive knowledge about theDS610CU before serving the unit.

1.1 GENERAL NOTES FOR SERVICING

- (1) Before trying to disassemble theDS610CU, make sure the power supply cord of theDS610CU is disconnected from the power outlet. Under any circumstance, do not remove or install the connectors on theDS610CU with the power supply turned ON.
- (2) Use caution not to drop small parts or screws inside the unit when disassembling and reassembling. If left inside, they might cause the malfunction of the unit.
- (3) Do not pull the connector cable when disconnecting it. Hold the connector.
- (4) When carrying the scanning head unit, put it in an anti-static bag.
- (5) Keep the document table glass surface always clean. If contaminated, use a dry clean cloth for cleaning.
- (6) Use caution not to injure your fingers or hands when disassembling or reassembling the unit.

1.2 GENERAL DESCRIPTION

DS610CU is a fantastic color digital copier with an optional Automatic Document Feeder when connected to a printer. The digital solution makes your reproduction exceedingly clear and sharp compared to regular copy machines. Through auto photo and text separation feature, your photo reproduction is amazingly improved with details and gray scale. The DS610CU is also easy to use since the control panel on the front looks just like a panel on a regular copier. Users can enjoy copying almost immediately without further learning.

DS610CU is also a scanner when connected to a host computer. With a simple touch of the "Scan" virtual button, the ease-of-use scanning software immediately pops up on your computer screen. Without further leaning, you can get a scan image and link the image to a variety of applications, for example, the image-editing software, the OCR(Optical character recognition) software, the E-mail software, the Fax software, etc. to make your jobs done in just a second.

1.3 COPY FEATURES

(1) A Compact and light weight copier

With few kgs and a small foot print few inches more than an A4 page, DS610CU is easy and convenient to transport and relocate to fit your ever changing requirement.

(2) Ease of Use

The control panel on the front of DS610CU looks like a panel on a regular copier. The operating steps follow the same procedure as other regular copier.

(3) Auto photo and text separation

Incorporated with the dialogic processor, a mixed photo and text original could reproduce a clearer detail of both the photo and the text.

(4) Clear image of three dimensional object

Based on the CCD technology, DS610CU could break through the limit of two dimensions, and produce a clear image for a three dimensional object.

(5) Reduction or enlargement from 25% to 400%

DS610CU provides reduction or enlargement for your original from 25% to 400%. You can access the feature through the preset ratio or in 1% increment.

(6) Auto Duplication

With this command, you no longer need to repeatedly copy the same small picture at different paper.

(7) A full color scanner if connects to a host computer

When DS610CU is connected to a host computer and a printer, it is possessed of a full color scanning capability.

(8) Auto paper feeding

With Automatic Document Feeder (ADF), DS610CU is capable to fast make color or B/W copy.

2. SPECIFICATION

2.1 Basic Specification

2.1 BASIC SPECIFICATION

General Description		
System Features	<ul style="list-style-type: none"> ■ Legal, flatbed with optional U-shape ADF ■ Stand-alone Copy ■ USB host scan ■ High speed transmission by JBIG compression 	
External Connections	<ol style="list-style-type: none"> 1. Parallel x 2 (for Copy application) 2. USB (for host scan) 	
User Interface	<ol style="list-style-type: none"> 1. 1x16 characters LCD 2. Intuitive Front Panel contain 15 buttons 	
Engine Specifications		
Image Sensor	CCD TCD2557D (5340 elements/3 line)	
Light Source	Cold Cathode Fluorescent Lamp	
Optical Resolution	600 x 600 dpi	
Enhanced Resolution	9600 x 9600 dpi	By Twain driver
Color/Grayscale Output Quality	42bit color, 14 bits grayscale	
Memory Size	16MByte for OA980 8MByte for KS41100(Arm7 cpu)	
Flash Memory Size	4Mbits	
Power Source	24V DC, 2A external power adaptor	
Power Consumption	Less than 20W	
Dimensions (WxDxH)	Flatbed unit : 476x356x91 mm (Flatbed) ADF unit : 446.5x201x88 mm (with paper tray)	
Weight	Flatbed unit : 4.3 Kgs (9.5 lbs) ADF unit : 1.4 kgs(3.1 lbs)	
Warm Up Time	30 seconds	
Time to Sleeping Mode	15 minutes	

Life of Lamp	50000 hours	
Scanner Life	120000 scans or 5 years	
Scan Specifications		
Scan area	Up to Legal	
Preview time	11 seconds	Legal size
Scan time	600dpi color mode: 210 sec gray mode: 48 sec lineart mode: 24 sec 300dpi color mode: 32 sec gray mode: 7.5 sec lineart mode: 7.5 sec	Letter size
Copy Specifications		
First Copy time	B/W: TBD Color: TBD	Test Printer: TBD
Multi-Copy Speed	B/W: TBD (PPM) Color: TBD(PPM)	With ADF option
Multiple Copies	Up to 99	
Origin Type	Book / sheet	
Origin Size (scan area)	Up to Legal	
Copy Size	Letter / A4 / Legal	
Copy Paper Type	Plain paper, premium paper, glossy paper, and transparencies	
Copy Mode	Photo / Text / Mixed	
Copy Quality Control	Yes, Normal / Quality	
Printer Language	Postscript, PCL, GDI	
Printer Interface	IEEE 1284 ECP/SPP	
Print Resolution	Up to 600dpi	
GDI / JBIG Command Set	Yes	
Density Control	7 levels density control	
Color Intensity Control	7 levels intensity control	
Zoom	25% ~ 400%, in 1% increments	
Pass-through Print	Yes	
Background Removal	Yes	
De-screen	No	

Mirror	Yes	
ADF Specifications		
Type	U-shape	
Paper Tray Capacity	25 pages	
Document Size	4.5" x 5.5" ~ 8.5" x 14"	
Document Weight/Thickness	14 ~ 32 lb / 0.002" ~ 0.006"	
Paper Feed	Face Up	
Jam Rate	1/1000	
Miss Feed	1/1000	
Multiple Feed	1/500	
Duty Cycle	7,500 pages/month	
MTBF	5000 hours	
MTTR	20 min	
Life	240,000 (ADF) scans or 5 years	
Environment and Regulation Specifications		
Environmental Test	Storage: -40°C~65°C, 10%~90% R.H. Vibration: AV standard spec Drop: drop high=96.5cm Operation: 10°C~35°C, 10%~85% R.H. Life: scan times=52000 times	
Safety Regulation	C-UL, TUV/GS, CB, NOM	
EMI Regulation	FCC DOC class B (Part 15 subchapter J) CE Mark(1998) class B VCCI class B B.S.M.I class B C-Tick class B ICES class B	
Administration and Maintenance Specifications		
Improve Parallel Throughput	Up to 800K	
Improve Printer Profile Capacity	Yes	
Firmware Update Tool	Yes, USB version	
Printer Profile Update Tool	Yes, USB version	

3. UNPACKING, INSTALLATION, AND TRANSPORTATION

- | | |
|------------|------------------------------------|
| 3.1 | Precautions of Installation |
| 3.2 | Unpacking Procedure |
| 3.3 | Installation |
| 3.4 | Placing the Original |
| 3.5 | Transportation |

3.1 PRECAUTIONS OF INSTALLATION

Pay attention to the following matters before unpacking and installation.

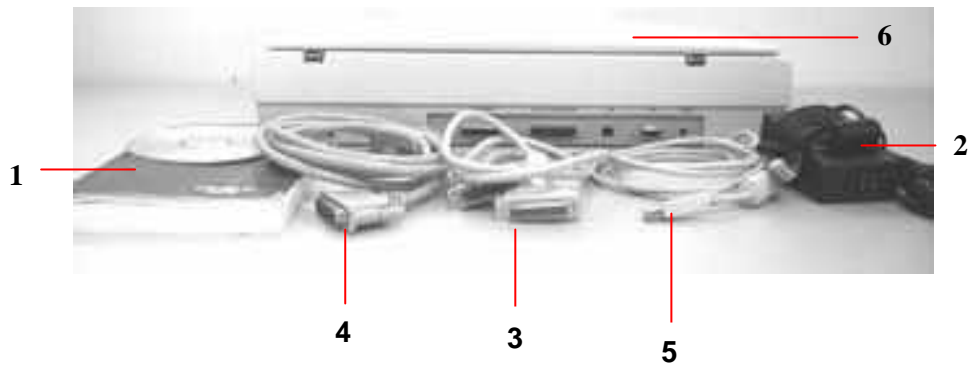
- Do not install in a place where vibration may occur.
- Keep the DS610CU out of direct sunlight. Do not install near a heat source.
- Do not place the DS610CU around materials which shut off the circulation of air.
- Do not install in a humid or dusty place.
- Use care not to scratch the glass surface of the DS610CU or the document holding pad with a clip or staple.
- Do not use the wall socket with connecting devices which may generate noise, for example, air-conditioner, etc.
- Use a suitable AC power source.
- Place the DS610CU on a level surface.

3.2 UNPACKING PROCEDURE

Unpack the DS610CU according to the following procedure.

- Remove the packing material.
- Remove the DS610CU from the shipping container.
- Remove the DS610CU from the PVC bag.
- Check the items by referring to Figure 3.1.
- For any missing items, please contact your nearest dealer or distributor.

Note: Keep all the packing material in case you may need to return the DS610CU.



1. Utilities & Documentation CD
2. Power Adapter/Cord
3. Parallel Cable for Computer Connection
4. Parallel Cable for Printer Connection
(not included)
5. USB Cable
6. DS610CU

Figure 3.1 Package Contents

3.3 INSTALLATION

(1). Unlocking theDS610CU

Before you use DS610CU, be sure to unlock it by moving the lock switch under the DS610CU to the “Unlock” position (See the following figure). The lock switch is designed to protect the scanning head in case of any damage during shipment.

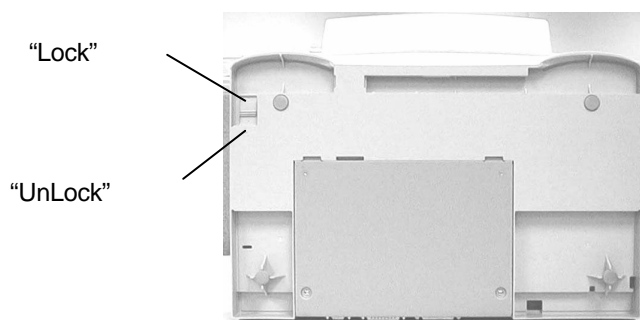


Figure 3.2 Unlock theDS610CU

Note: If you need to transport the DS610CU, be sure to first move the lock switch to the “Lock” position to prevent any damage during transportation._

(2). Connecting to a printer

- a) Plug one end of the printer cable to the port marked “to printer” on the back of your DS610CU.
- b) Plug the other end to your printer. (See the Figure 3.3)

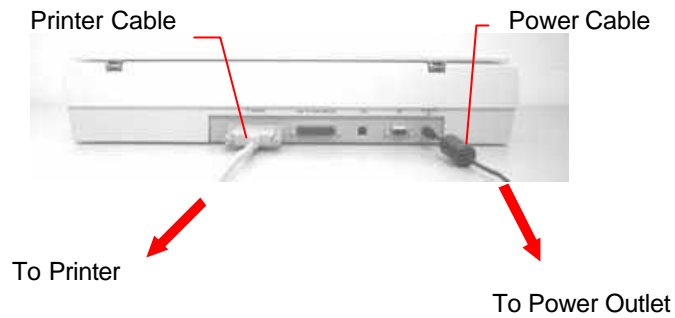


Figure 3.3 Connecting to a laser printer

(3). Connecting to Power

- a) Plug the small end of the power cable(supplied) to the power jack on the back of your DS610CU.
- b) Plug the large end of the power cable to the power outlet.
- c) Turn on your printer(See the above figure).

(4). Connecting to a host computer

- a) Remove the printer cable from the parallel port of your computer and plug it into the port marked "To printer" on the back of the DS610CU. Leave the other end connected to your printer.
- b) Plug one end of the supplied parallel cable to the port marked "To PC Parallel" on the back of the DS610CU and plug the other end into your PC where the printer port cable was plugging in.
- c) Connect the USB cable to DS610CU.

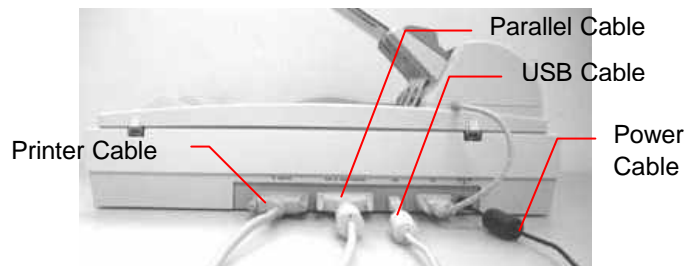


Figure 3.5 S610CU cable connection

3.4 PLACING THE ORIGINAL

- (1) Place your original face down on the document glass.
- (2) Observe that the upper-left corner (front page) of your original is placed beneath the home position mark.

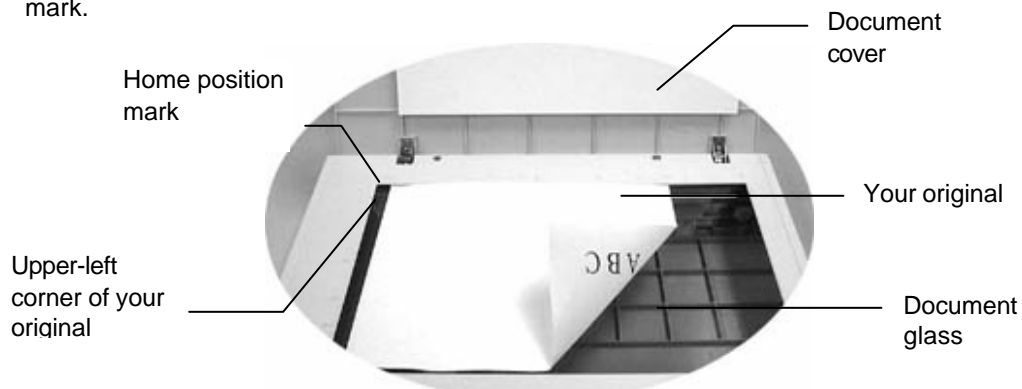


Figure 3.4 Placing the original

3.5 TRANSPORTATION

To move the DS610CU from where it is installed, for repair or any other reason, make sure to observe the following conditions:

- (1) Turn off the power of the DS610CU.

If the scanning head is located at a place other than the home position, turn the DS610CU on to return the scanning head to the home position. Before making sure the scanning head is returned to the home position, turn the power supply off.

- (2) Move the lock switch to the "lock" position.
- (3) Remove the power and printer cables.
- (4) Put the DS610CU in the packing case with the packing material.

4. PARTS IDENTIFICATION

4.1 External View

4.1 EXTERNAL VIEW

4.1.1 FRONT VIEW

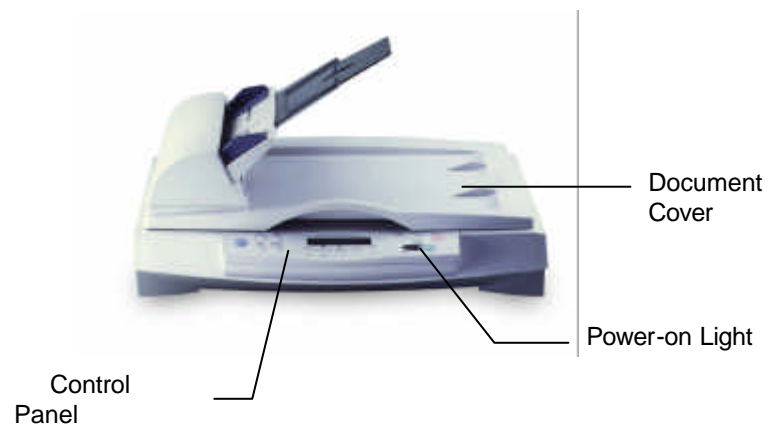


Figure 4.1 Front view

(1) Document cover

Used to hold the document.

(2) Document glass

Document are set on the glass surface.

(3) Scanning head

The major component used to scan the document on the document glass.

(4) Power-on light

Turns on when the DS610CU is power on.

4.1.2 REAR VIEW

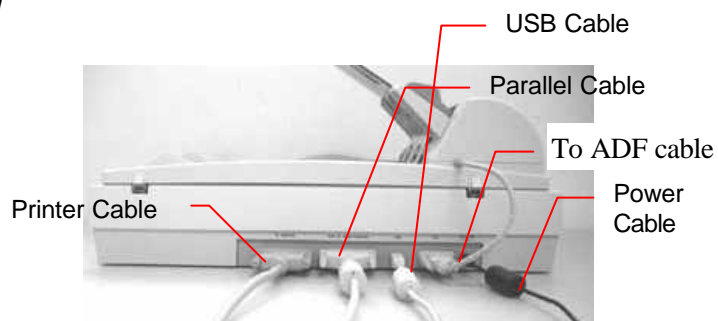


Figure 4.2 Rear view

(1) Power jack

Used to connect power cable.

(2) "To PC Parallel" port

Used to connect parallel cable(supplied).

(3) "To Printer" port

Used to connect printer cable.

(4) "To ADF" port

Used to connect ADF cable

4.1.3 TOP VIEW

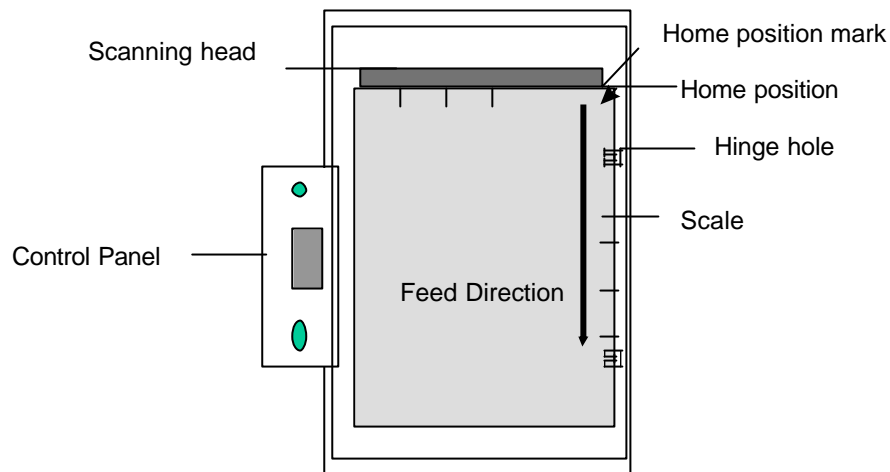


Figure 4.3 Top view

(1) Home position

Scanning begins at this position. The scanning origin and scan area on the computer display depends on the software to be used.

(2) Feed direction

The direction in which the scanning head moves.

(3) Scale

The document glass provides some fixed sizes, for example, U.S. legal, Letter, A4, B5, A5, and A6 of a document on the glass.

(4) Hinge hole

When installing the document cover or an optional unit, insert the hinge into this hole.

5. THEORY OF OPERATION

5.1 INTRODUCTION

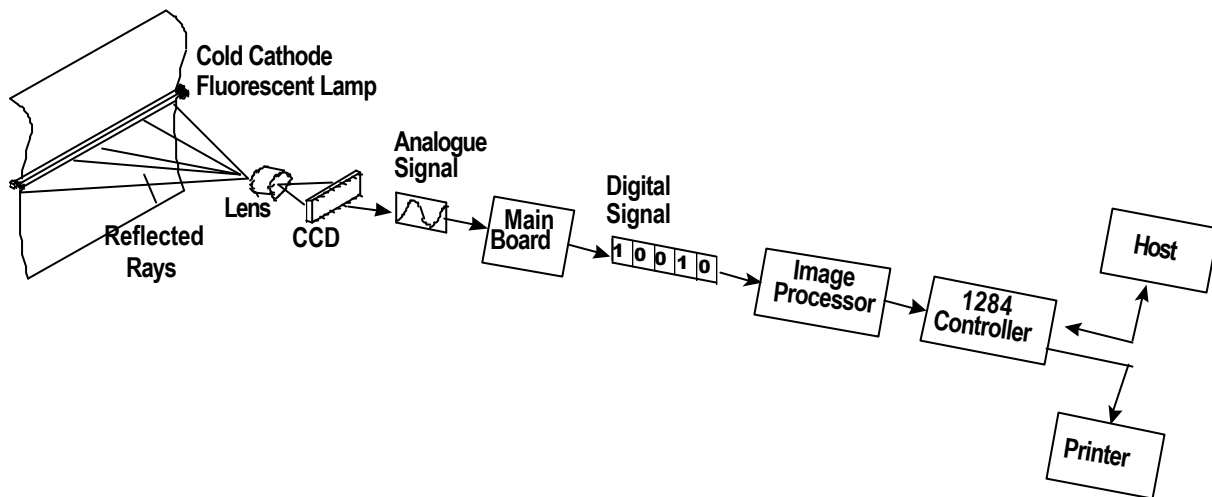


Figure 5.1 Theory of Operation

The reflected rays of the your original as shown in the above Figure 5.1 pass through the lens and creates an image on the CCD (Charged Coupled Device). Then, according to the different light intensity perceived by the CCD, the CCD will transfer these data into a series of analog signals to the main board, where the signals are turned into digital signals. These digital signals flows to the image processor to store into a printer acceptable format then goes to 1284 Controller to transfer to printer or to a host computer.

5.2 MAIN CONTROL UNIT

5.2.1 SYSTEM DIAGRAM

Figure 5.2 shows the system block diagram.

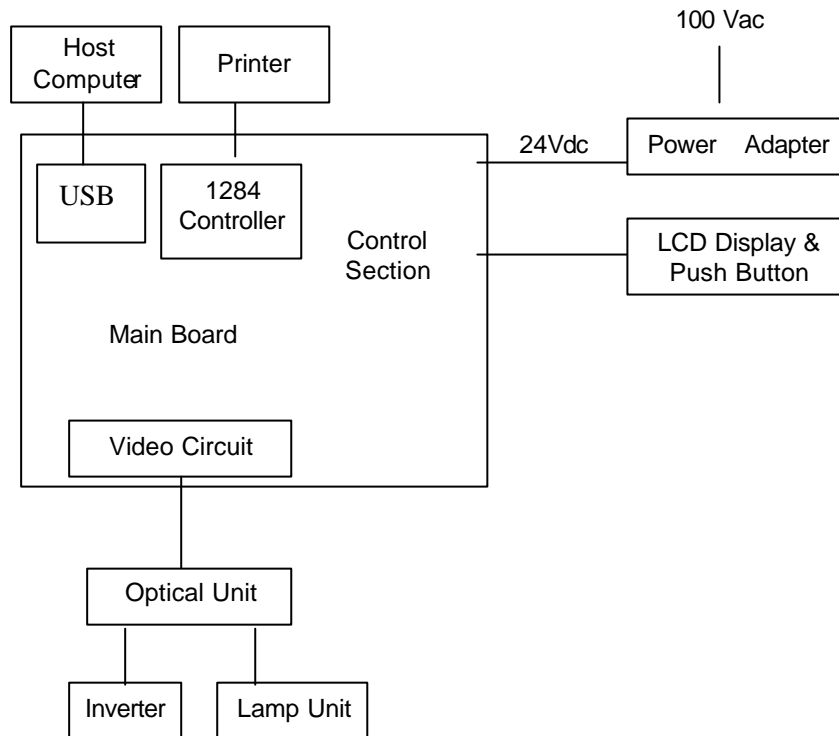
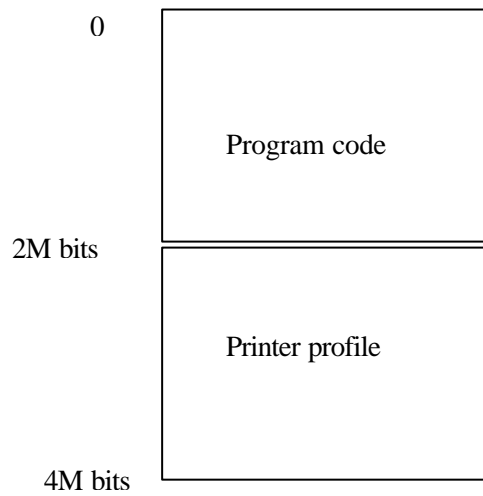


Figure 5.2 System block diagram

5.2.2 MAIN CONTROL CIRCUIT

This DS610CU is controlled by the Arm7. The Arm7 is configured with a 64-KB external ROM program area, a 256-BYTE internal RAM work area, a 64-KB external RAM work area, 2 timer / counters, 4 I/O ports, 2 external interrupts, and 2 internal interrupts for 2 internal timer / counters.

Address Maps:



5.2.3 VIDEO CIRCUIT:

The video circuit of this DS610CU includes: 1. CCD driving circuit, 2. CCD signal processing circuit.

1. CCD Driving Circuit

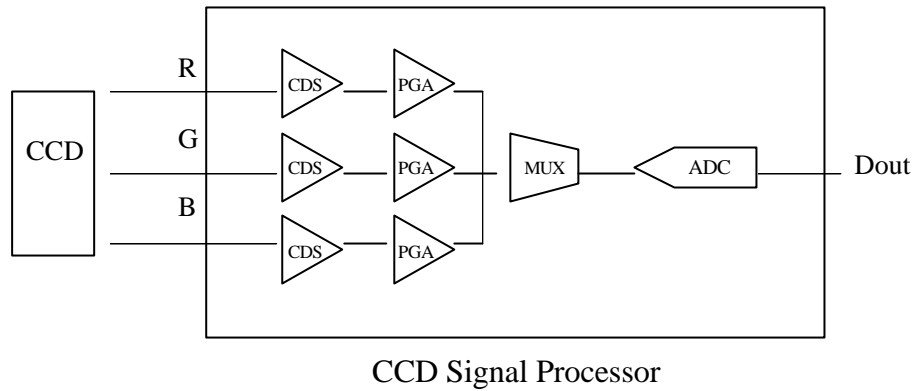
The CCD driving circuit is used to generate correct signals to the CCD, so that the CCD may generate the correct image data.

Signals for CCD:

Pin Assignment for CCD cable

Pin No.	Name	Function
1	A.G.	Analog Ground
2	VOR	CCD Red Channel Output Signal
3	VOG	CCD Green Channel Output Signal
4	VOB	CCD Blue Channel Output Signal
5	A.G.	Analog Ground
6	12Vc	CCD Power Supply
7	12Vc	CCD Power Supply
8	D.G.	Digital Ground
9	RS	CCD Reset Gate
10	CP	Clamp Gate
11	PHI1-	CCD Clock Phase
12	PHI2-	CCD Clock Phase
13	SHR	CCD Red Channel Shift Gate
14	SHG	CCD Green Channel Shift Gate
15	SHB	CCD Blue Channel Shift Gate
16	SH	SHIFT Gate
17	VCC	Digital 5V Power Supply
18	12VI	Inverter Power Supply
19	12VI	Inverter Power Supply
20	I.G.	Inverter Ground
21	I.G.	Inverter Ground
22	I.G.	Inverter Ground

2. CCD signal processing circuit



The CCD signal processor includes all the necessary circuitry to perform three-channel conditioning and sampling. The signal chain consists of three-channel correlated double sampling (CDS) and programmable gain adjustment of the CCD output (PGA) is a 10 bit analog to digital converter (ADC) quantizes the analog signal.

5.2.4 LCD MODULE CIRCUIT

The circuit for LCD module controls the function of the entire module including the LCD Display, the push button on the Control Panel, and the Ready LED.

Pin assignment of LCD module

Pin No.	Name	Function
1	XAD0	80C32 Address/Data Bus bit 0
2	XAD1	80C32 Address/Data Bus bit 1
3	D.G.	Digital Ground
4	XAD2	80C32 Address/Data Bus bit 2
5	XAD3	80C32 Address/Data Bus bit 3
6	D.G.	Digital Ground
7	XAD4	80C32 Address/Data Bus bit 4
8	XAD5	80C32 Address/Data Bus bit 5
9	D.G.	Digital Ground
10	XAD6	80C32 Address/Data Bus bit 6
11	XAD7	80C32 Address/Data Bus bit 7
12	VCC	Digital Power Supply
13	VCC	Digital Power Supply
14	T1	LCD Read/Write Select Signal
15	D.G.	Digital Ground
16	OCS5	LCD Chip Select Signal
17	RS	LCD Register Select Signal
18	D.G.	Digital Ground
19	IOCS4	Push button/LED Control Port
20	D.G.	Digital Ground
21	IOCS3	Push Button Read Port
22	D.G	Digital Ground

5.2.5 SENSOR INPUT

The sensor input includes home position sensor.

Home position sensor

The home position of the carrier motor is detected by photo sensor. The photo transistor transmission to the photo sensor receiver circuit is shown below .

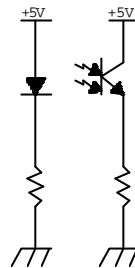
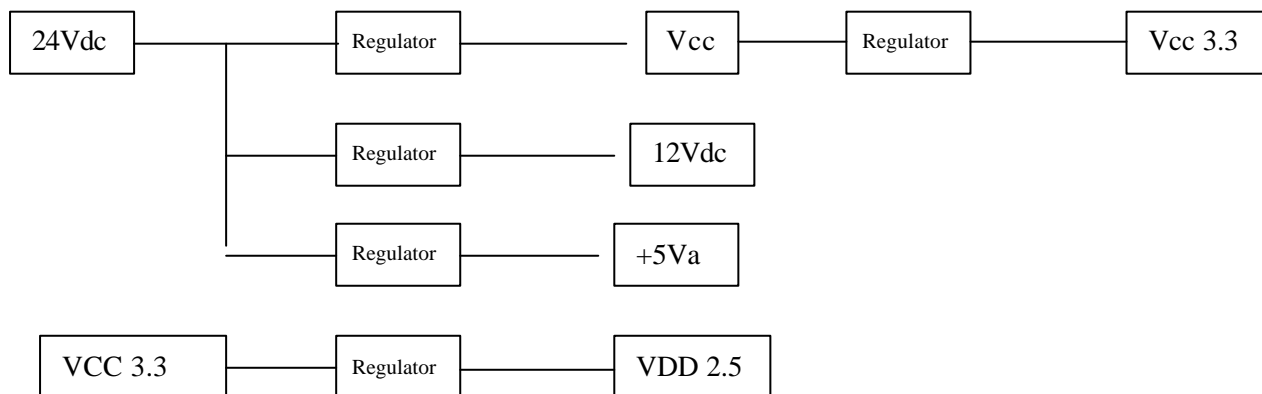


Figure 5.3 Home position sensor

The home position is detected when the carrier passes between the LED and the photo transistor.

5.2.6 SUB POWER SUPPLY CIRCUIT

The sub power supply circuit is provided for the internal analog circuit. Input is 12V and output is Vcc and +5Va. The circuit configuration is shown below:



The sub power supply is used for: A/D, and logic circuits.

5.2.7 POWER SUPPLY

In this system, there is only one type of power supply. Please see Table 5.1 for details.

Table 5.1 Power Adapter

Type \ Characteristic	Wall-mount
Input voltage range	100-240V
Input current(max.)	1.2A (rms)
Input frequency	50-60Hz
Max. in-rush current(@115VAC, cold start)	30A
Output voltage	+24Vdc
Min. load current	0.0A
Max. load current	2A
Total Power	48W

6. TROUBLESHOOTING

- | | |
|------------|----------------------------------|
| 6.1 | Troubleshooting Flowchart |
| 6.2 | Tables |
| 6.3 | Error Codes |

This section is given to locate and resolve the causes of troubles so as the DS610CU is always in good working condition. The trouble modes, relevant units, maintenance methods, and error codes are described below.

When a problem occurs, troubleshoot the problem according to the symptoms it shows.

Check the following first:

1. Is anything being operated improperly?
2. Does the problem recur, or is it regular?

Figure 6.1 to Figure 6.3 show the troubleshooting flowcharts.

The causes and maintenance methods for each failure mode are described in Table 6.1 through 6.7

6.1 TROUBLESHOOTING FLOWCHART

6.1.1 POWER ON TO DS610CU READY

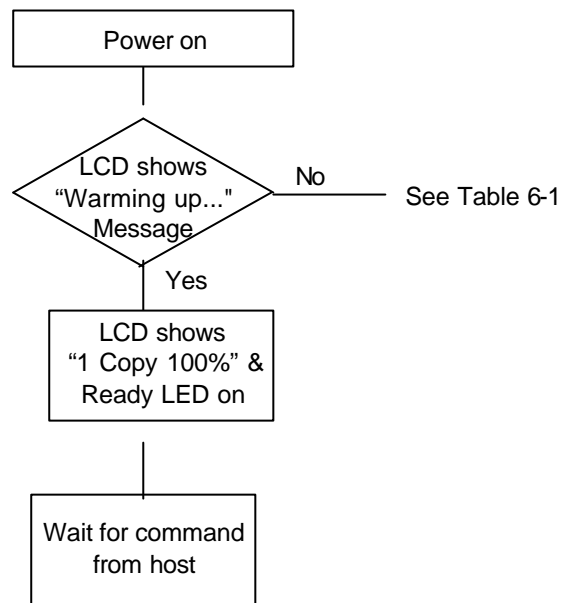


Figure 6.1 Power on to DS610CU ready

6.1.2 COPIER OPERATION

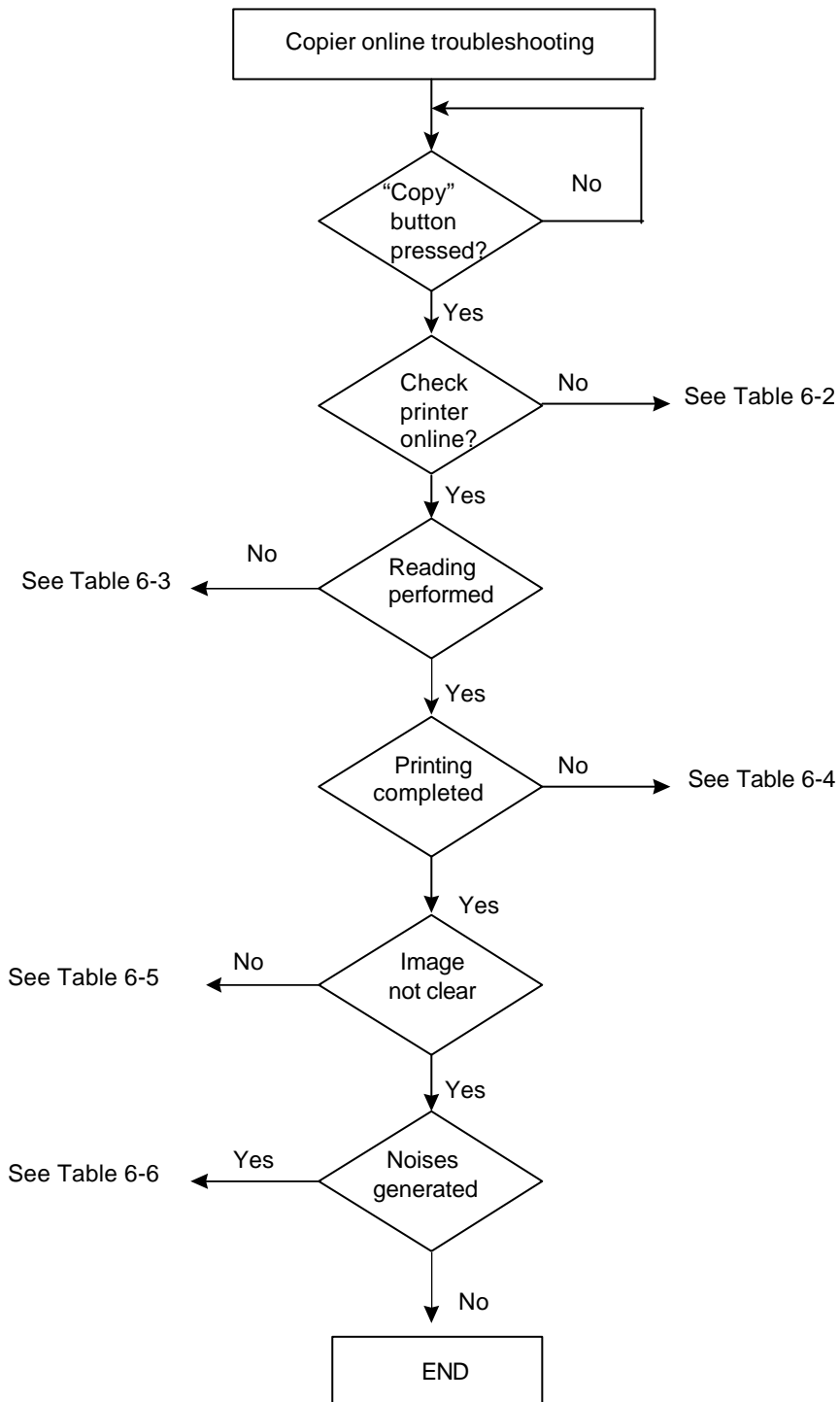


Figure 6.2 Copier operation flowchart

6.1.3 CONTORL PANEL OPERATION

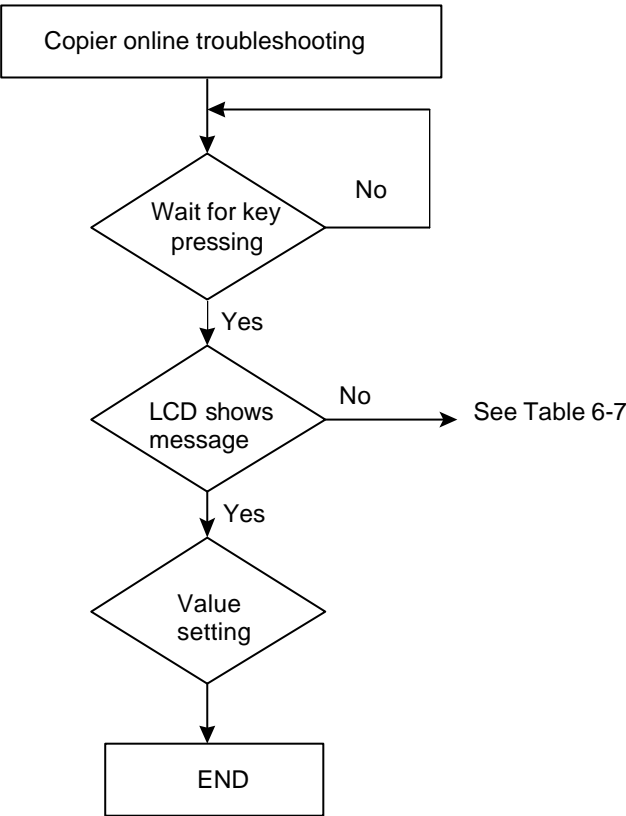


Figure 6.3 Control panel operation

6.2 TABLES

The following tables provide detailed troubleshooting information.

Table 6.1	The Ready LED does not light up or the LCD does not display.
Table 6.2	Printer does not react.
Table 6.3	Optical path dirty or hardware problem.
Table 6.4	Printer does not print.
Table 6.5	Image not clear.
Table 6.6	Noise generated.
Table 6.7	LCD does not show message after command.

6.2.1 LCD DOES NOT DISPLAY

Table 6.1

Cause	Relevant Unit	Check Method	Maintenance Method
Unplugged from outlet	None	Visual check	Insert the AC plug into the outlet
AC power unplugged from unit	None	Visual check	Insert the AC power adapter cable into the unit
AC voltage failure	None	AC outlet voltage check	None
Power adapter output voltage failure	Power unit	Output voltage (+24v) check	Replace the power unit
PCB failure	Main control PCB or the LED board	Tester check (+24V, GND)	Remove the cause or replace the PCB
LCD module main board connection failure	LCD module main board	Visual check	Plug the connector and secure it firmly

6.2.2 PRINTER DOES NOT REACT

Table 6.2

Cause	Relevant Unit	Check Method	Maintenance Method
Printer cable failure	Printer cable	Visual check	Secure printer cable firmly or replace the printer cable
Printer link failure	Main PCB	Visual check	Replace the PCB
	Printer paper jam	Visual check	Remove paper
	Printer paper empty	Visual check	Insert paper
	Printer problem	Visual check	See printer manual
	Printer busy	Visual check	Wait till printer ready

6.2.3 READING IS NOT PERFORMED

Table 6.3

Cause	Relevant Unit	Check Method	Maintenance Method
Scanner cable failure	Scanner cable	Visual check	Attach the scanner cable
Scanner link failure	Main PCB	Visual check	Replace the PCB

6.2.4 PRINTER DOES NOT PRINT

Table 6-4

Cause	Relevant Unit	Check Method	Maintenance Method
Printer does not has "PCL" language	Printer	Visual check	Change "PCL" emulation printer
Paper size incorrect	Paper tray	Visual check	Replace paper tray
Printer problem		Visual check	Check printer

6.2.5 IMAGE UNCLEAR

Table 6-5

Cause	Relevant Unit	Check Method	Maintenance Method
Lamp too dark	Lamp	Visual check	Replace the lamp
Dirt on flatbed glass	Flatbed glass	Visual check	Clean the flatbed glass with isopropyl alcohol
Printer toner low	Printer toner	Visual check	Check printer toner or replace the toner
Printer memory not enough	Printer	Visual check	Add printer memory

6.2.6 NOISE GENERATED

Table 6-6

Cause	Relevant Unit	Check Method	Maintenance Method
Motor unit failure	Motor unit	Replace the motor unit	Replace the motor
Main control PCB failure	Main control PCB	Replace the main control PCB	Replace the main control PCB
Scanning module failure	Scanning module	Check scanning module shakiness	Replace the scanning module
Dirt on rail	None	Visual check	Clean the rail with oil

6.2.7 LCD DOES NOT SHOW MESSAGE AFTER COMMAND

Table 6-7

Cause	Maintenance method
LCD module cable failure	Attach the LCD module cable and secure it firmly
LCD problem	Replace the LCD module
Push button failure	Replace the LCD module

6.3 ERROR CODES

6.3.1 LCD ERROR MESSAGE

Error Message	Description	Solution
SDRAM test fail	SDRAM error	Check or Replace main board.
Optical fail	Optical chassis error	Check or Replace chassis.
Check chassis lock	Chassis lock	Unlock scanner.
Home sensor fail	home sensor error	Check or Replace motor or Sensor.
USB test error	USB error	Check or Replace main board.
O1 test error	Printer port error	Unlock scanner.
Flash Error!	Flash Write error	Check or Replace main board.
Fail to re-flash	Flash Write error	Check or Replace main board.
Write fail	Firmware fails to be written to Flash	Check or Replace main board.
ADF Paper JAM!	ADF Paper jam	Clear paper jam or Replace ADF motor or paper out sensor.
Wait Printer...	Data is being transmitted between printer and PC.	Wait for all data to be completely transmitted from PC to printer.
ADF Paper JAM ! Please Clear Jam Press Any Key To Resume Copy	Paper Jam happens during coping.	Clear paper jam, and press any key to resume copy status.
ADF Paper JAM ! Please Clear Jam Press Any Key To Resume ...	Paper Jam happens when powered on.	Clear paper jam, and press any key to resume start status.
ADF Paper JAM ! Please Clear Jam Press Any Key To Resume Scan	Paper Jam happens during scanning.	Clear paper jam, and press any key to resume scan status.
Loader On 1.0.1	If power failure happens during downloading firmware, the message, "Loader On 1.0.1", appears after restarting.	Download firmware again or Replace main board.

6.3.2 DIGITAL COPY DEVICE ERROR MESSAGE ON PC

Error Message	Description	Solution
150	Driver Busy.	Try later.
151	Parameter Check Error.	Check out parameters.
152	Fail to allocate Memory	Close some applications on your PC, and try again.
153	Driver Initial Failure	Restart Windows
154	Scanner internal error.	Power on the scanner again. If the problem exists, replace the main board.
155	Scanner Connect Failure.	Ensure all cables are firmly connected.
156	Start Read Image Error.	Power off or on and try again.
157	Read Image Error.	Power off or on and try again.
158	End Image Error.	Power off or on and try again.
160	Driver Initial Failure. (bottom level)	Restart Windows
161	Fail to send Scanner Parameter . (bottom level)	Restart Windows & scanner
162	Scanner Busy.	Don't let two application programs call the scanner driver at the same time.
163	Send Command Error.	Restart Windows & scanner
165	Power Off.	Power on scanner
166	Firmware disappears.	Re-install scanner driver
167	IO port is busy.	Check whether there is any conflict on your PC hardware.
1	Fail to find scanner.	Power on scanner or Replace main board.
2	Scanner R/W test failure.	Replace main board.
3	Scanner connection failure.	Ensure all cables are firmly connected or Replace main board.
4	Scanner RAM test failure	Replace main board.
5	Scanner RAM test failure.	Replace main board.
6	Scanner DMA test/power cable failure	Check whether there is any conflict on parallel port in r PC hardware.
7	Calibration failure.	Replace lamp, inverter or main board.
9	Paper feed error.	Replace ADF.
10	Sensor error. Unlock the scanner by turning the scanner lock to the Use position.	Unlock scanner.
50	Unknown error	Restart Windows & scanner
51	Unknown error	Restart Windows & scanner
52	Unknown error	Restart Windows & scanner
53	Unknown error	Restart Windows & scanner
54	Unknown error	Restart Windows & scanner

DS610CU

55	Unknown error	Restart Windows & scanner
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7. PREVENTIVE MAINTENANCE

7.1 Cleaning

This DS610CU is designed to be free of maintenance. However, it is suggested to perform preventative maintenance in the shorter term either every 6 months or every 60,000 sheets scanning to ensure a consistently optimum performance.

7.1 CLEANING THE DOCUMENT GLASS

There are times when the document cover and document glass is contaminated with ink, toner particles or paper coatings. In this case, the DS610CU will have to be cleaned frequently to ensure the best performance.

Follow the cleaning procedure as below:

- (1) Open the document cover.
- (2) Dip a clean cloth with non-corrosion solvent like alcohol (purity above 99.5%).
- (3) Wipe the document cover and the document glass gently as shown in Figure 7.1 Continue until the entire document cover and document glass is cleaned and observe that no cleanser remains on the surface.
- (4) Close the document cover. Your DS610CU is now ready for use.

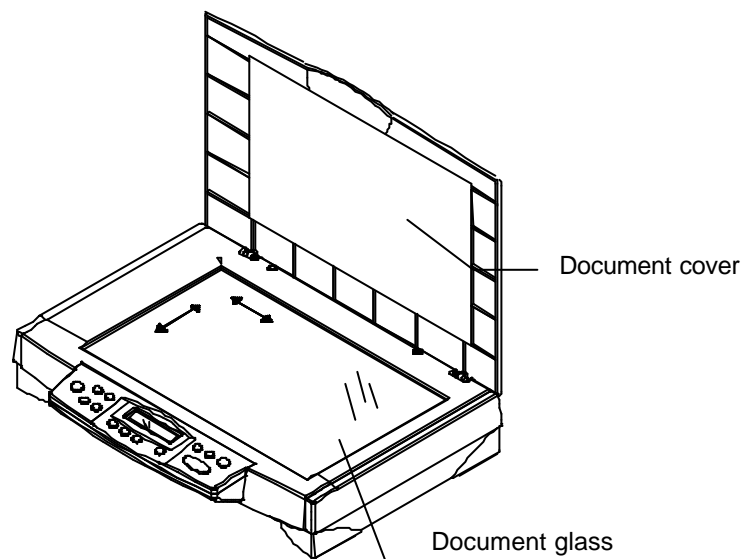


Figure 7.1 Cleaning

8. DISASSEMBLY

- 8.1 Service Tools**
 - 8.2 Lubricants**
 - 8.3 Procedure for Disassembly and Reassembly**

8.1 SERVICE TOOLS

Table 7.1 describes the maintenance tools necessary for the maintenance of this equipment.

No.	Name	Description
1	Minus screwdriver	Idler pulley module screw
2	Philips screwdriver (magnetic)	Nominal No.2 M3, M4
3	Oil	Shell "Terrace Oil 46"
4	Grease	Shell "Alvania Grease No.2"
5	Alcohol (Isopropyl 91% >)	Cleaning
6	Digital voltmeter	With 0.01 V range
7	Oscilloscope	100 MHz or more with external sweep
8	Blower	Cleaning

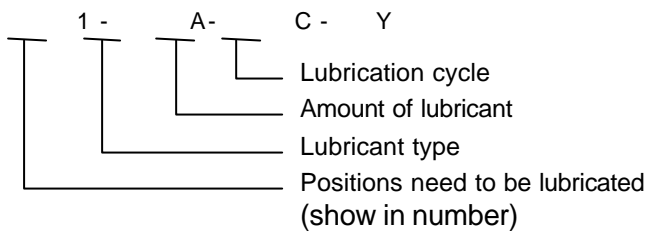
Table 8.1 Maintenance tools

8.2 LUBRICANTS

This section describes the items to check and the places to lubricate when maintenance parts are replaced.

8.2.1 MECHANICAL UNIT LUBRICATION

This lubrication method:



1. Positions need to be lubricated:
The positions need to be lubricated is indicated in numbers.
2. Lubricant type:
A: Shell Alvania Grease No. 2
B: Shell Terrace Oil 46
3. Amount of lubricant:
C: Coat thinly uniformly
4. Lubrication cycle:
Y: Every year

Table 8.2 below shows the position to be lubricated.

Lubrication Position	Lubricant Type	Lubricant Amount	Lubrication Cycle	Lubrication Position
1	B	C	Y	Sliding rod
2	A	C	Y	Sliding frame

Table 8.2

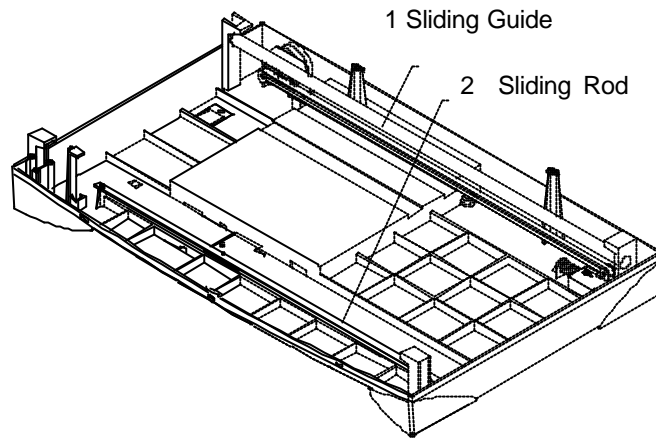


Figure 8.1 Lubricated Position

8.3 PROCEDURE FOR DISASSEMBLY AND REASSEMBLY

8.3.1 NOTES ON DISASSEMBLY

- (1) Clean the disassembly and assembly location.
- (2) Disconnect the power cable and remove the AC plug from the outlet before disassembly and assembly.
- (3) Follow the disassembly and assembly procedures. Never loosen the screws of parts that must not be disassembled.
- (4) Store the disassembled parts in a clean place to avoid loss.
- (5) After replacement, check the contacts and spare part mounting.
- (6) Assemble the parts in reverse order of disassembly procedure.

8.3.2 DOCUMENT COVER

- (1) As shown in the figure below, lift the document cover to remove the studs from the hinge holes. The studs are loosely attached to the hinge holes in the purpose to cover your original when it is a few inches high.

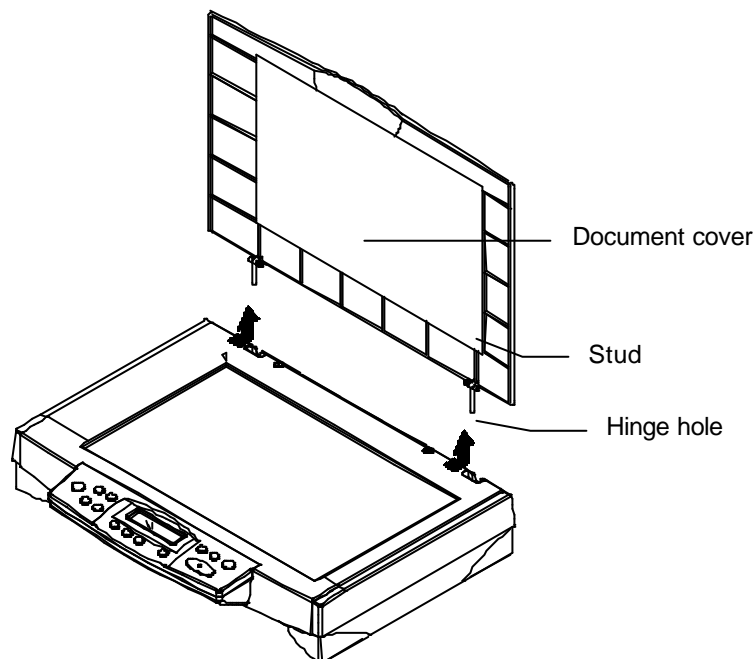


Figure 8.2 Document cover removal

8.3.3 UPPER HOUSING

- (1) Remove the document cover as described in the previous section.
- (2) As shown in the figure below, loosen the fixing screws with a Philips screwdriver.
- (3) Remove the upper housing by lifting it gently.

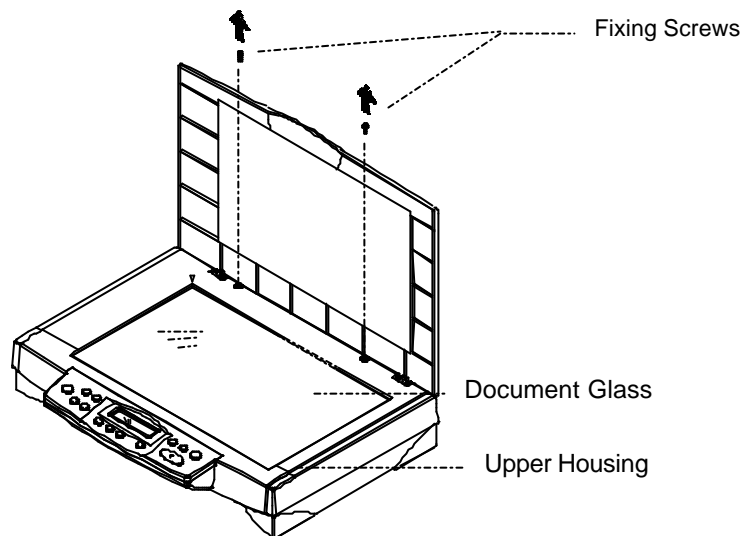


Figure 8.3 Upper housing removal

8.3.4 MAIN CONTROL BOARD ASSEMBLY

- (1) Loosen the fixing screws of the metal cover from the bottom housing as shown in the figure below.
- (2) Lift and remove the metal cover by disconnecting the FFC.

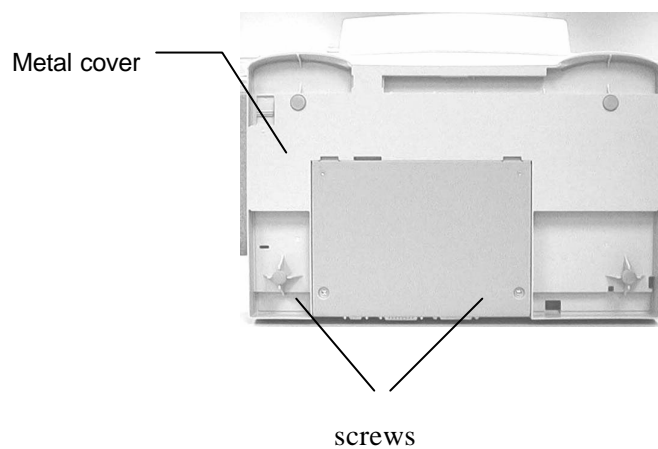
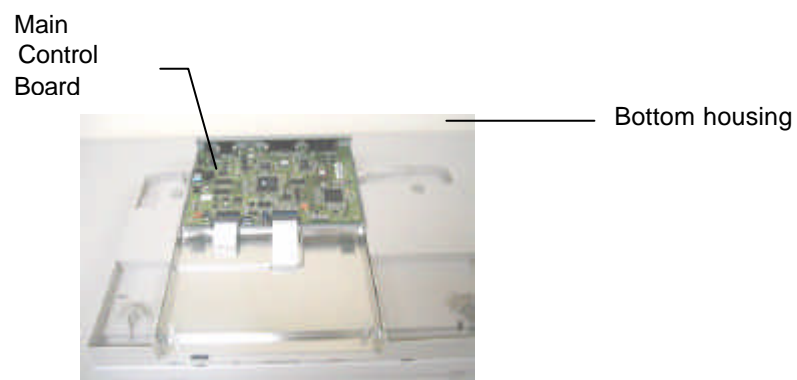


Figure 8.4 Main control PCBA removal



8.3.5 MOTOR BELT

- (1) Remove upper housing and main control PCBA. (See section 8.3.4 and 8.3.4)
- (2) Disconnect the motor belt by releasing the belt spring as shown in the figure below.

Note:

During the assembling process, keep the belt straight in center line.

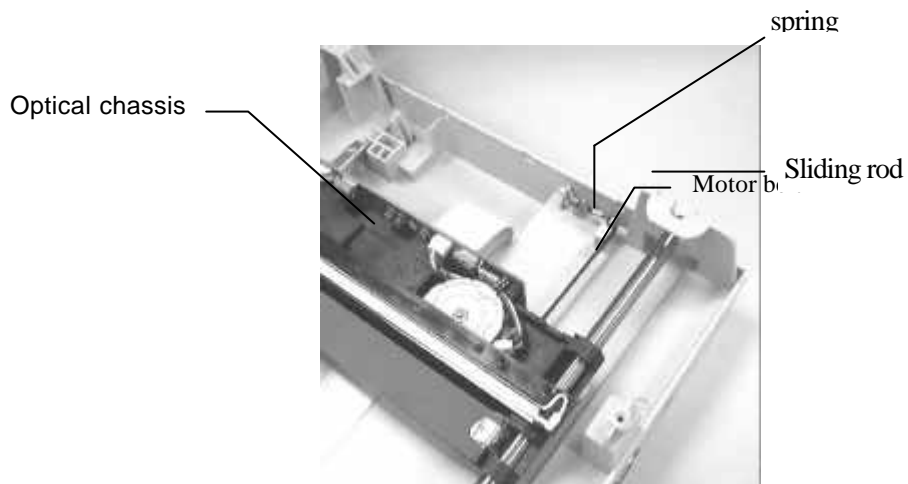


Figure 8.5 Belt removal

8.3.6 OPTICAL CHASSIS

DISASSEMBLING PROCEDURE

- (1) Remove the upper housing. (See section 8.3.3)
- (2) Remove the main control PCBA. (See section 8.3.4)
- (3) Remove the cable clamp for the CCD flat cable.
- (4) Disconnect the motor belt by releasing the belt spring. (See section 8.3.5)
- (5) Lift the sliding rod and pull it out.

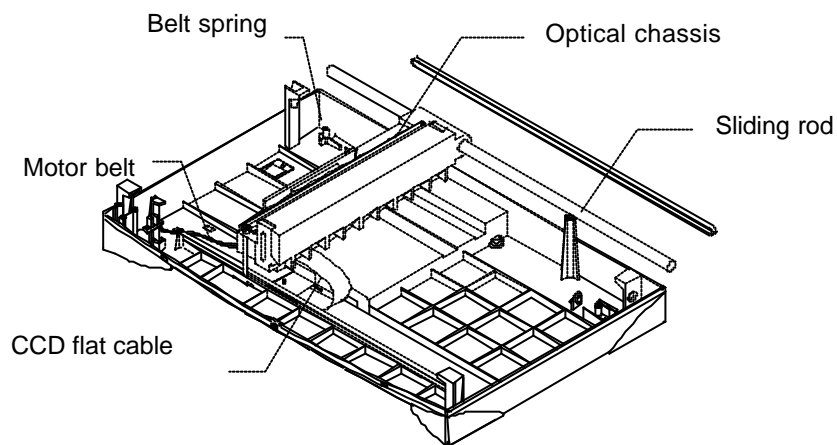


Figure 8.6 Optical chassis removal

Attention: Do not remove the flat cable from the optical chassis.

ASSEMBLING PROCEDURE

Assemble the part in reverse order of the disassembling procedure.

Note:

- Do not remove the flat cable from the optical chassis as the flat cable need special tool to reinstall it.
- Any unauthorized action may cause unexpected result and will therefore not be responsible by the manufacturer.

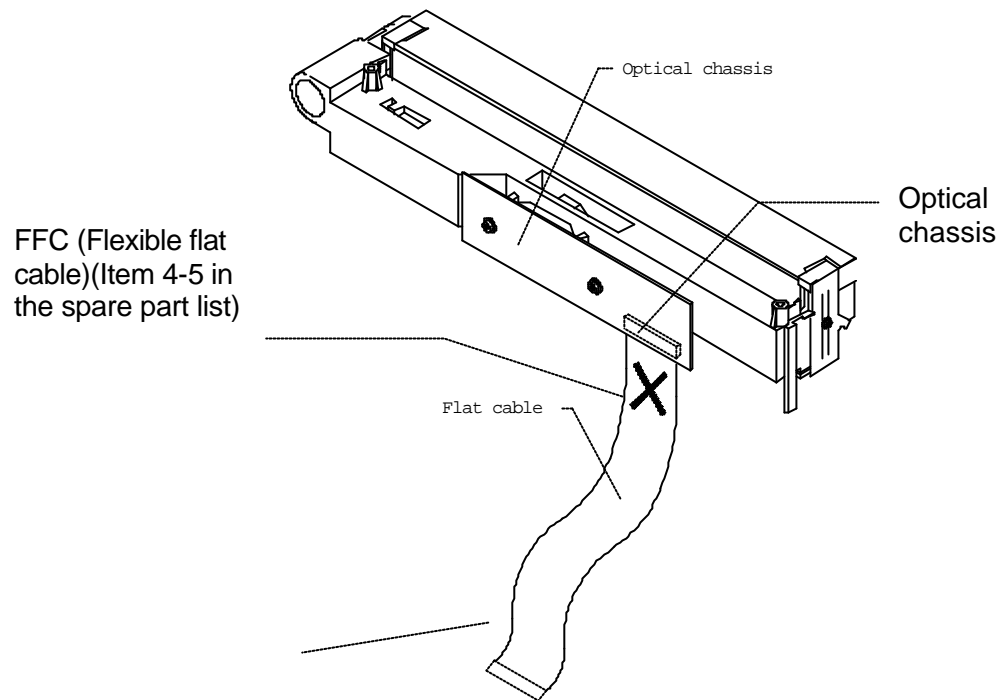


Figure 8.7 The correct direction of the CCD flat cable

8.3.7 CCFL INVERTER PCBA

- (1) Remove optical chassis. (See section 8.3.6).
- (2) Remove the CCFC inverter PCBA from the optical chassis.
- (3) Disconnect the CCFL inverter cable and CCFL inverter PCBA cable.

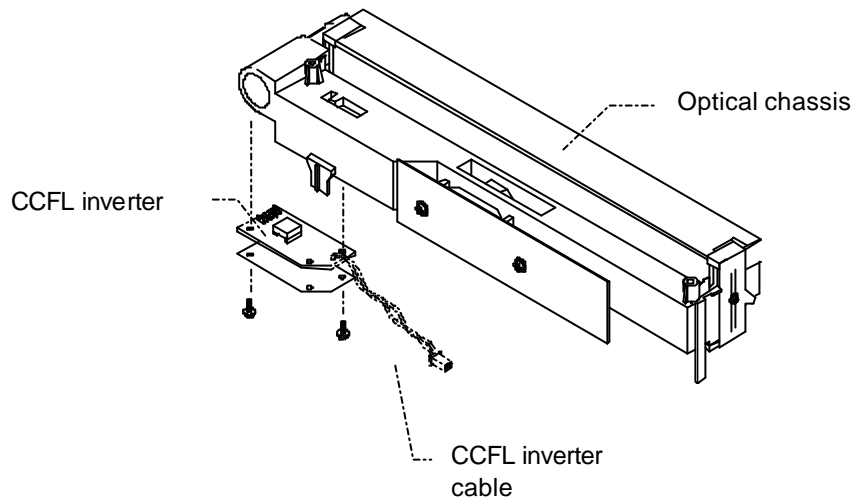


Figure 8.7 CCFC Inverter PCBA removal

8.3.8 LAMP ASSEMBLY

- (1) Remove the CCFC inverter (See section 8.3.7)
- (2) Loosen the fixing screws of the lamp holder.
- (3) Disconnect and replace the old lamp assembly with a new one.
- (4) Fix the lamp assembly in place with the fixing screw.

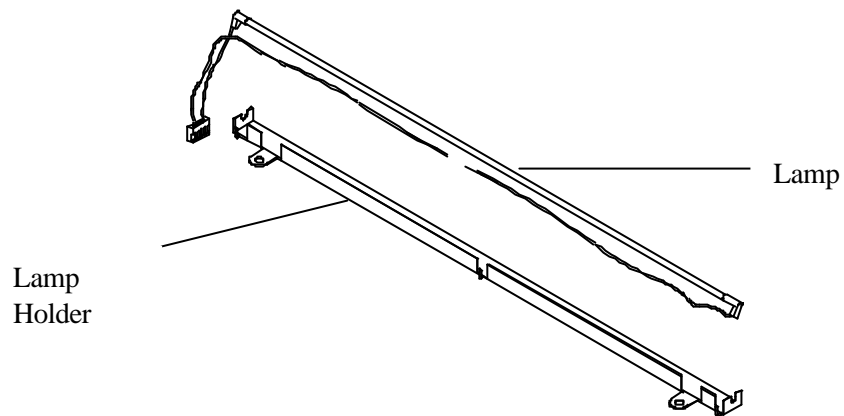


Figure 8.8 Lamp assembly removal

8.3.9 MOTOR UNIT

- (1) Remove upper housing. (See section 8.3.3)
- (2) Remove the optical chassis and the CCFL inverter PCBA. (See section 8.3.4 and 8.3.7)
- (3) Remove the lamp assembly by loosening the fixing screws. (See section 8.3.8)
- (4) Loosen the fixing screws as shown in the figure below.
- (5) Remove the motor cable connector.

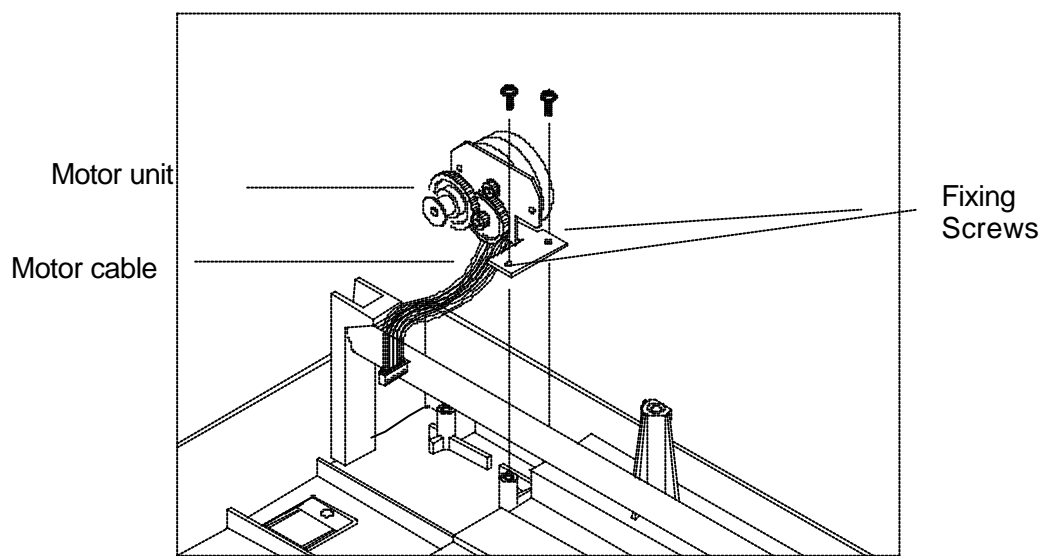
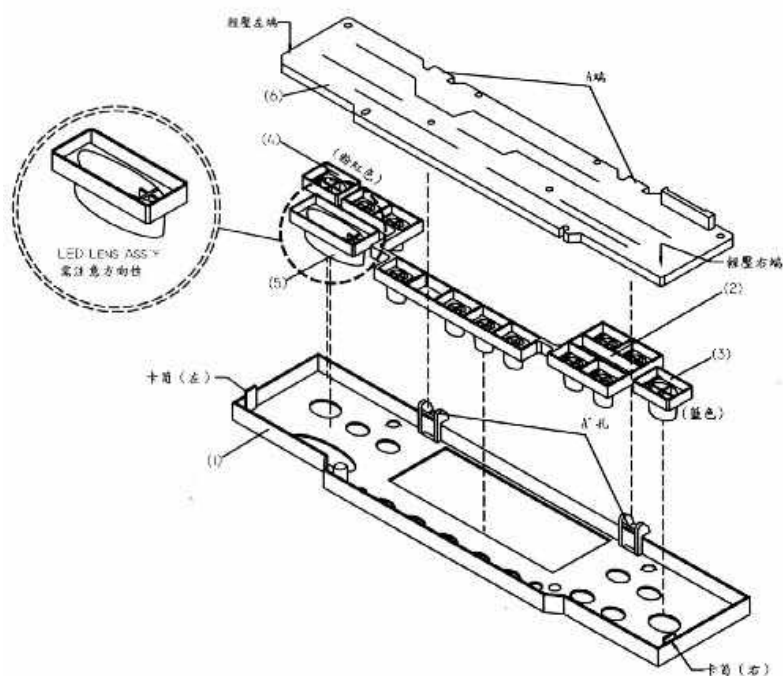


Figure 8.9 Motor unit removal

9. ASSEMBLY

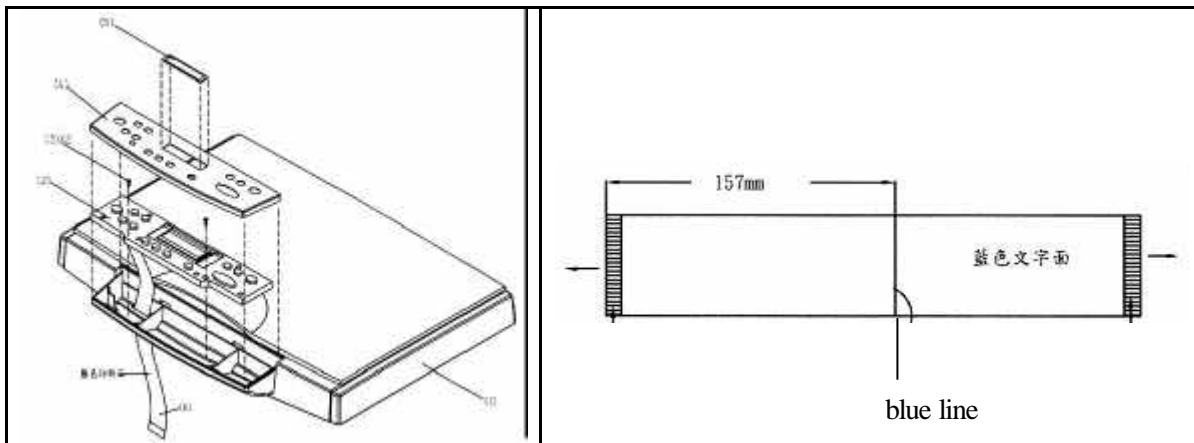
9.1.1 CONTROL BOARD ASSEMBLY

1. Install key nobs (2), (3),(4) and LED lens assembly to the control panel set.
2. Snap PCBA U105 into the control panel set at the lock holes A, and then snap in the right and left sides of the PCBA U105.



9.1.2 UPPER HOUSING ASSEMBLY

1. Draw a blue line on FFC (Item 3-3 in the spare part list) , and then connect it to PCBA UI05, as indicated.
2. Let the FFC cable on the control board assembly pass through the upper housing assembly. Install the control board assembly onto the upper housing assembly by tightening the two screws.
3. Attach the LCD panel on the control panel cover.
4. Remove the LCD 's glue tape from the control board assembly.
5. Snap the control board assembly into the upper housing assembly.



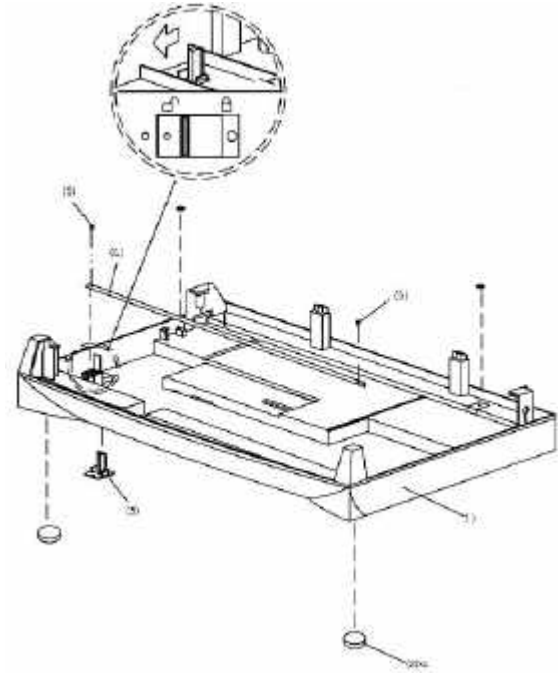
9.1.3 MAIN BOARD ASSEMBLY

1. Install PCBA MB145 on MAIN PCBA MOUNT.
2. Fix all the 3 connectors of PCBA MB145 to MAIN PCBA MOUNT by tightening screws.
3. Install PCBA MB145 to MAIN PCBA MOUNT by tightening screws.



9.1.4 MAIN BODY ASSEMBLY (1)

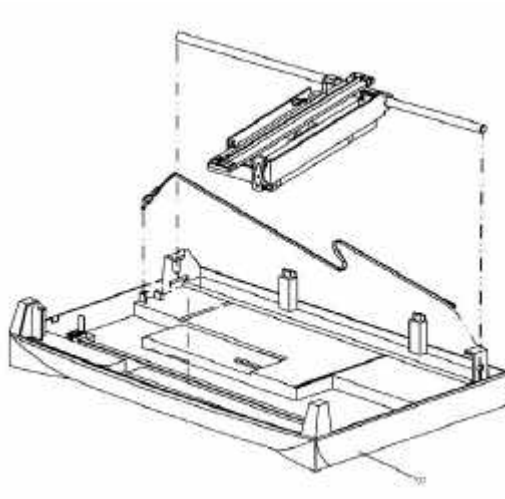
1. Install the lock to the bottom housing.



9.1.5 MAIN BODY ASSEMBLY (2)

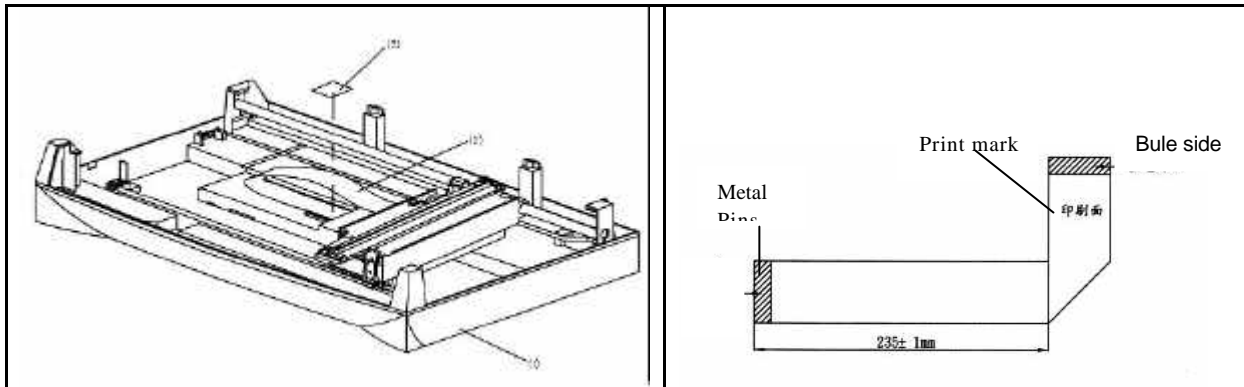
1. Hook the belt assembly to the specified locations on the bottom housing.
2. Lubricate the sliding rod with Dynamic SYN7999 oil. Let the sliding rod pass through the optical assembly, and then install the sliding rod to the bottom housing.
Make sure the optical assembly on the rod is moved smoothly.

Fix the belt
here



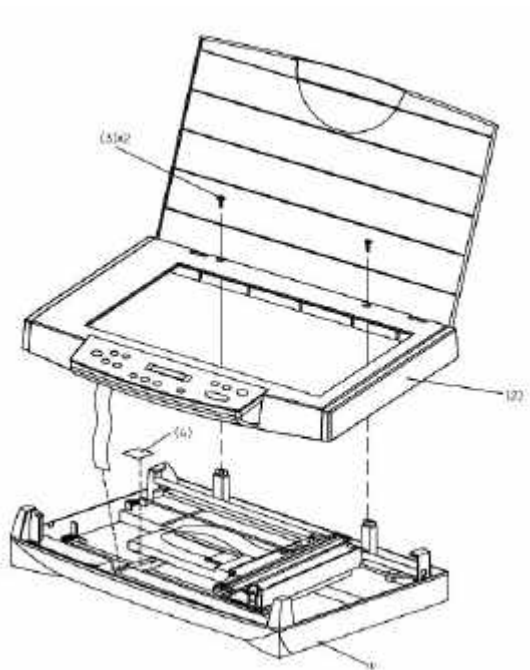
9.1.6 MAIN BODY ASSEMBLY (3)

1. Bend the FFC (item 4-5 in the spare part list) to 90 degrees. Stick twin adhesive on the FFC at the designated location 235 mm away from the metal pins.
2. Connect the FFC to the optical assembly and the bottom housing.
3. Snap a mylar into the bottom housing to fix the FFC .



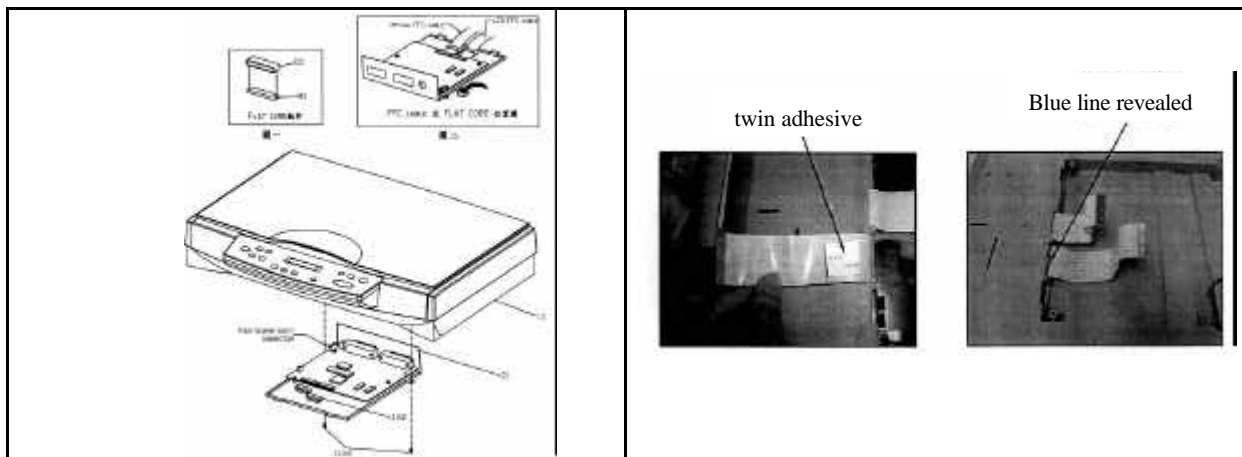
9.1.7 MAIN BODY ASSEMBLY (4)

1. Hook the belt to the chassis.
2. Stretch the spring to screw up the belt.
3. Let LCD FFC cable pass through the hole under the sliding frame, and then through the hole on the bottom housing. Snap a mylar to the hole on the bottom housing connected to the LCD FFC (item 3-3 in the spare part list).
4. Snap and screw the upper housing to the bottom housing.
5. Use the square plastic sheet to fix the FFC to prevent the FFC from moving.



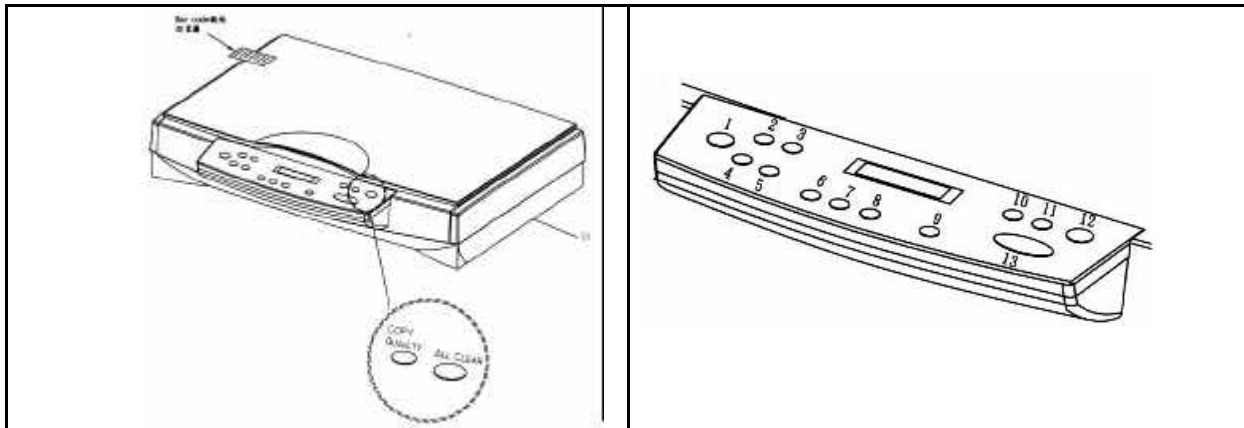
9.1.8 MAIN BODY ASSEMBLY (5)

1. Attach the sponge to the flat core.
2. Stick the twin adhesive to the FFC cable at the location indicated.
3. Stretch the FFC cable to reveal the blue marked line, and then stick to the bottom housing.
4. Let FFC cables pass through the flat cores, and then connect to the main body assembly. Stick the two flat cores to the main body assembly.
5. Connect the motor cable to the main board assembly's connector.
6. Screw the main board assembly to the bottom housing.



9.1.9 RUN-IN AND BUTTON TEST

1. Press “Auto/Text/Photo” and “All Clear” buttons together, and then plug in power.
2. After the LCD shows “KEY BUTTON TEST”, press the buttons in turn from Number 1 to Number 13.
3. Press “Copy” button after the LCD shows “123456789ABCD”.
If the message, “0000000000000”, “1111111111111”,....., appears, the button testing is OK. When the LCD shows “Burn-In”, the DS610CU is doing Run-in test.



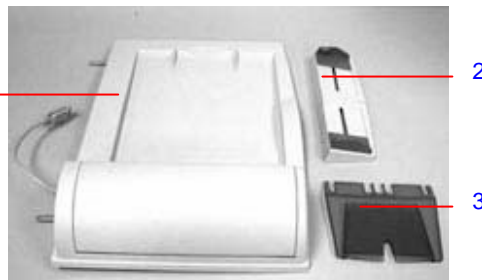
10. DS610CU AUTOMATIC DOCUMENT FEEDER (ADF) SERVICE GUIDE

The DS610CU Automatic Document Feeder (ADF) is a very convenient addition to your current DS610CU. With the ADF, you can automatically copy or scan up to 25 pages at a time.

10.1 INSTALLING THE ADF

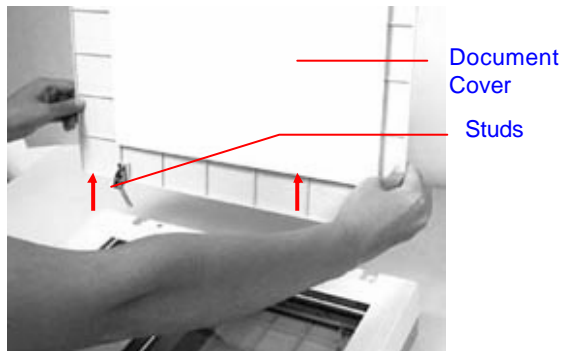
10.1.1 MAIN COMPONENTS

1. ADF Document Cover
2. ADF Paper Tray
3. ADF Paper Support



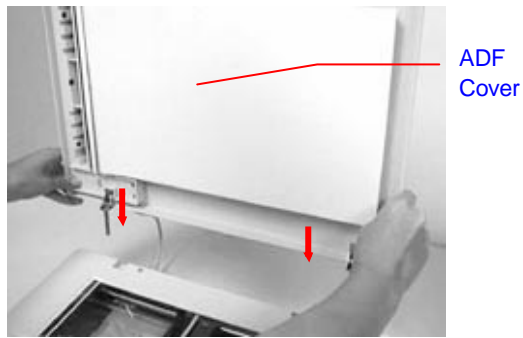
10.1.2 TO INSTALL THE ADF

1. Turn off your DS610CU.
2. Disconnect the power cable.
3. Remove the document cover by opening the cover and lifting the studs from the hinge holes at the rear of the DS610CU.



Note: Please store the document cover on a flat surface in a safe place.

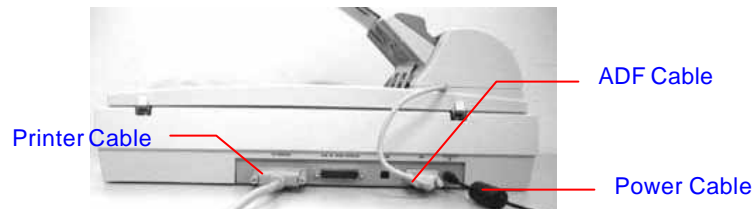
4. Hold the ADF document cover and insert its studs to the hinge holes at the rear of the DS610CU.



10.1.3 CONNECTING THE CABLES

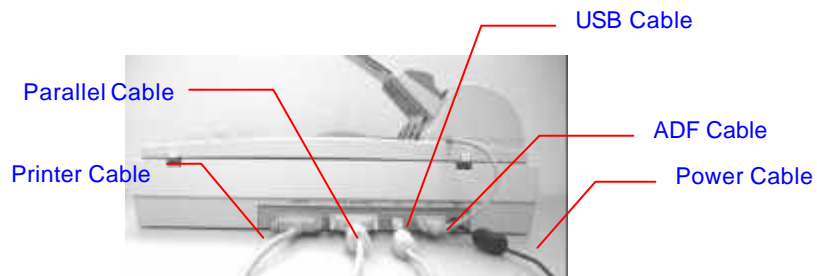
10.1.3.1 To connect DS610CU to work as a Copier

Connect the ADF cable, the power cable, and the printer cable (not included) respectively.



10.1.3.2 To connect DS610CU to work as a Scanner

Connect the ADF cable, the power cable, the parallel cable, USB cable, and printer cable (not included) respectively.



10.2 MAINTAINING THE ADF

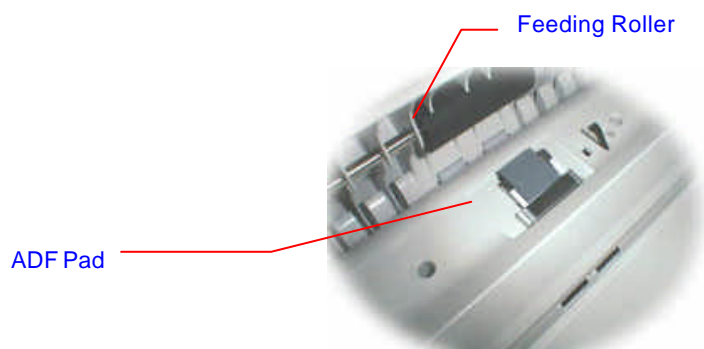
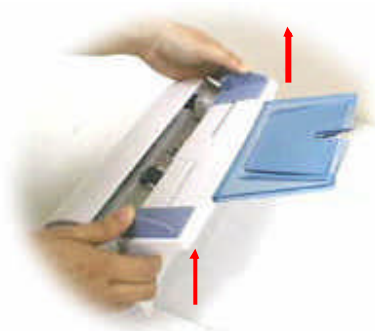
10.2.1 CLEANING THE ADF

The DS610CU is designed to be maintenance free. However, it still needs to be cleaned occasionally to ensure optimum image quality and performance.

From time to time the pad assembly and feeding rollers may become contaminated with ink, toner particles or paper dust. In this case the DS610CU may not feed documents smoothly. If this occurs please follow the cleaning procedures to return your Scanner to its original state.

The cleaning procedures:

1. Moisten a cotton swab with isopropyl alcohol (95%).
2. Gently open the ADF front cover. Wipe the feeding rollers by moving the swab from side to side. Rotate the rollers forward with your finger and repeat the above cleaning procedures until the rollers are clean. Be careful not to snag or damage the pick springs.
3. Wipe the pad in the direction from top to bottom. Be careful not to hook the pick springs.
4. Close the ADF unit. Your Scanner is now ready for use.

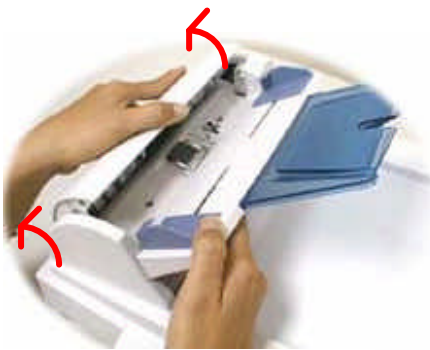


10.2.2 REPLACE THE ADF SNAP-IN PAD MODULE

After scanning approximately 20,000 pages through the ADF, the pad may be worn out and you may experience problems with document feeding. In this case, it is highly recommended to replace the pad module with a new one. For ordering the pad module, please consult your nearest dealer and follow the procedure below to replace it.

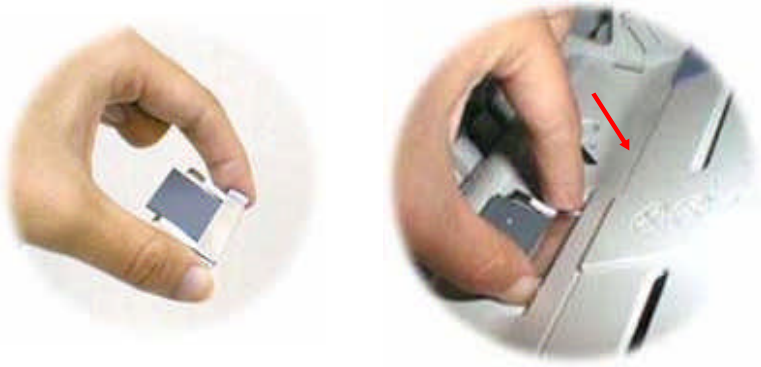
Disassembling Procedure

1. Gently open the ADF front cover to the left.
2. Press both arms of the ADF snap-in pad module inwardly with your two fingers to pull out the ADF snap-in pad module.



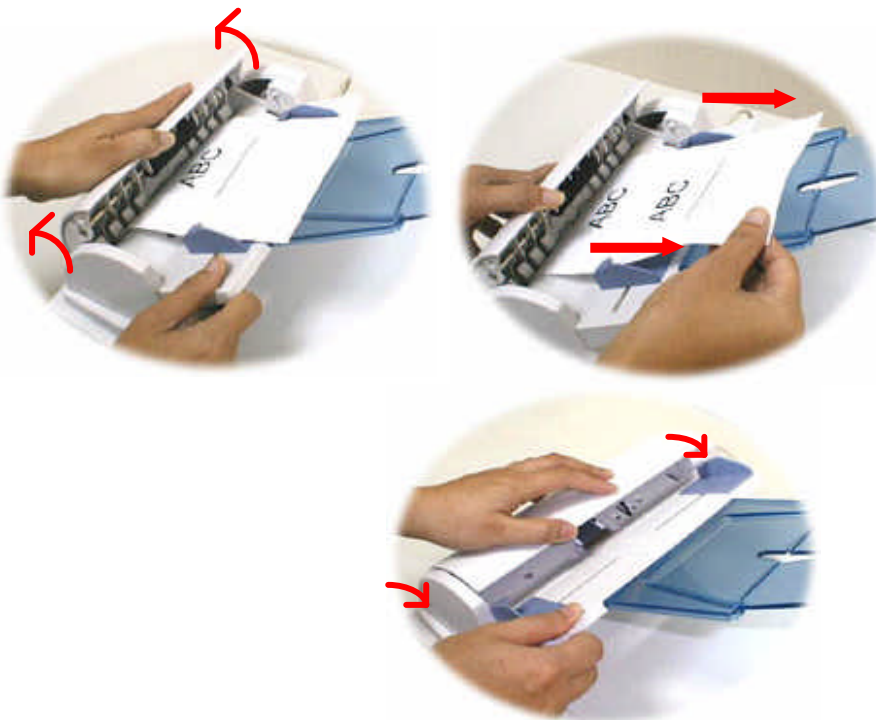
Assembling Procedure

1. Take out the ADF pad module from the box.
2. Press both arms of the ADF snap-in pad module inwardly with your two fingers
3. Place it into the holes until it snaps into place.

**10.3 HOW TO CLEAR THE PAPER JAM**

In the event of a paper jam, follow the procedures below to remove the paper:

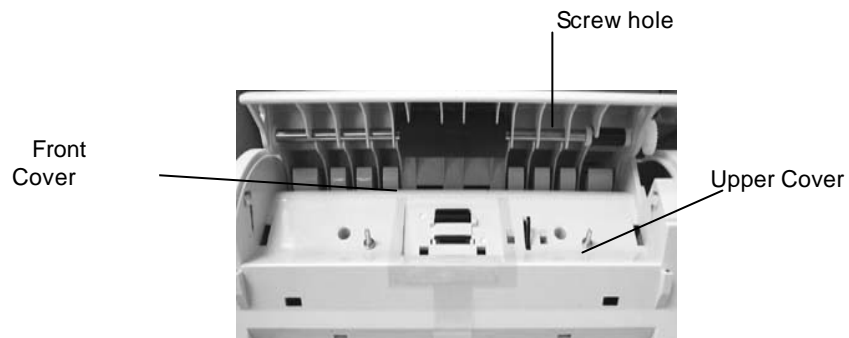
1. Turn the DS610CU off by disconnecting the power cable.
2. Gently open the ADF front cover to the left.
3. Carefully pull the paper out of the ADF unit.
4. Close the ADF front cover.
5. Turn on the DS610CU by reconnecting the power cable. Your DS610CU is now ready to use.



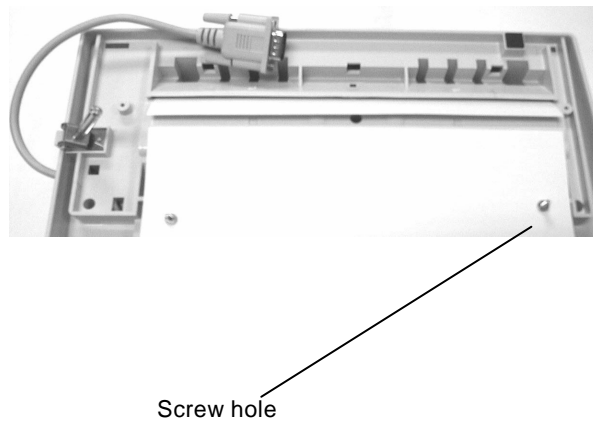
10.4 ADF DISASSEMBLY

10.4.1 DISASSEMBLING PROCEDURE

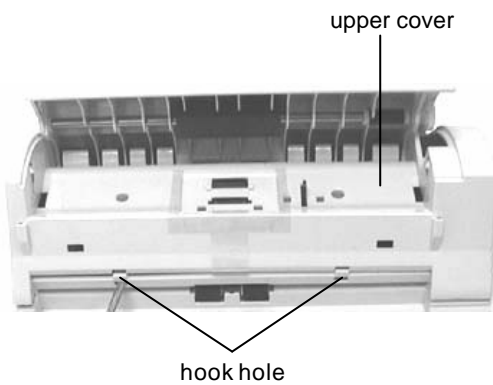
1. First, open the ADF front cover by moving it backward.
2. Loosen the two screws which fix the upper cover, as indicated below.



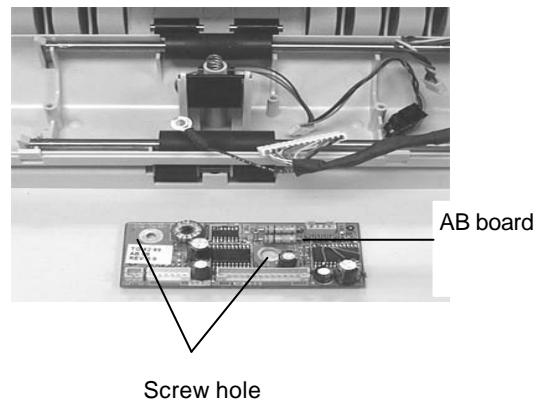
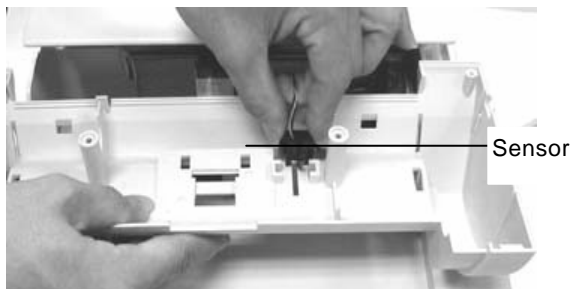
3. Gently turn the ADF upside down, and then loosen the two screws fixing the bottom, as indicated below.



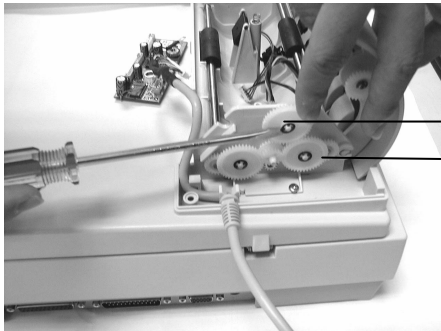
4. Insert and raise the front end of a screw driver in the two hook holes to unlatch the upper cover, as indicated in the left-side picture below.
5. Pull and lift the upper cover's handles respectively to remove the upper cover , as indicated in the right-side picture below..



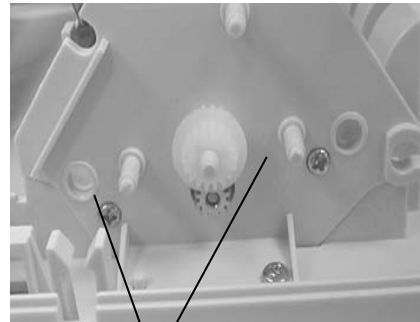
6. Remove snapped-in sensors, as indicated in the left-side picture below .
7. Replace the AB board by loosening the screws on the AB board, as indicated in the left-side picture below.



8. Get rid of the metal rings to remove the gears, as indicated in the left-side picture below.
(Remember each gear location for reassembling due to the difference in size.)
9. Remove the motor by loosening the screws fixed on the motor, as indicated in the left-side picture below.

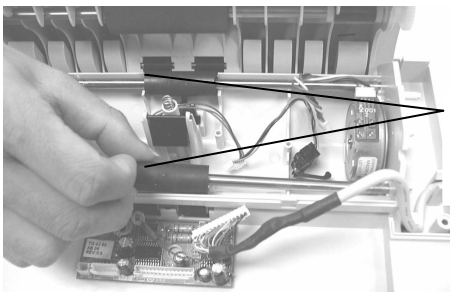


Metal ring
gear



Motor screws

10. Remove the feeding rollers by lifting them, as indicated below.

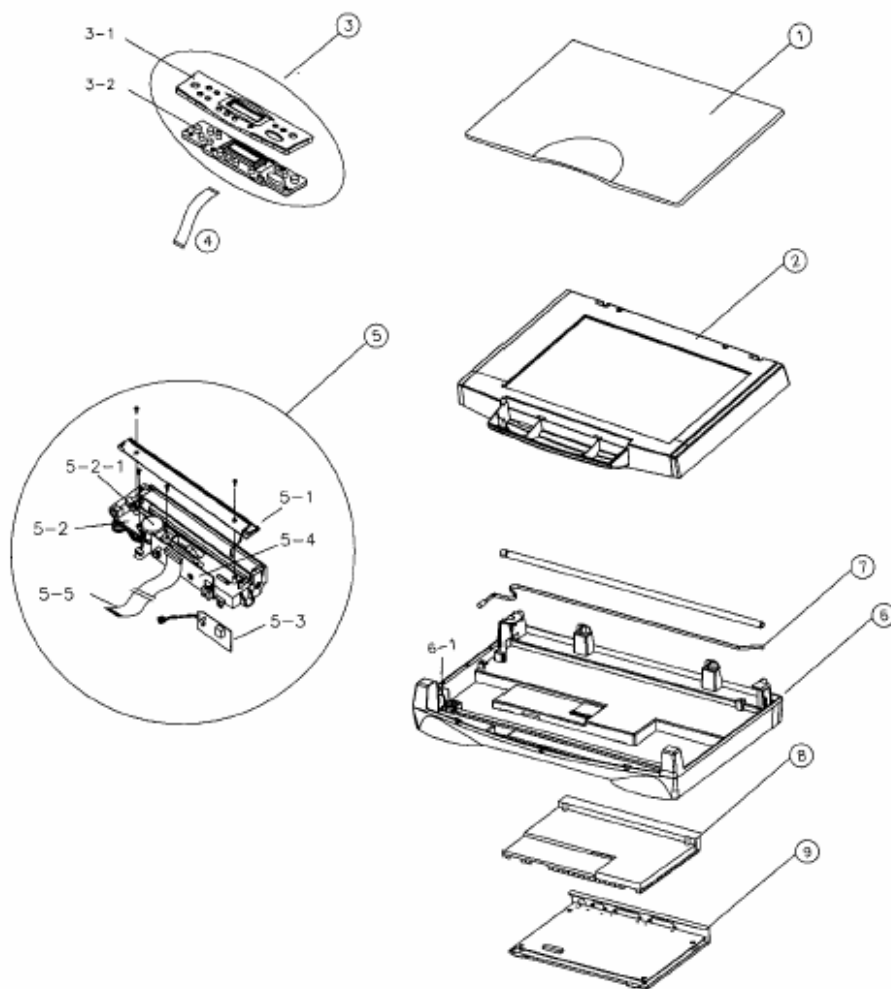


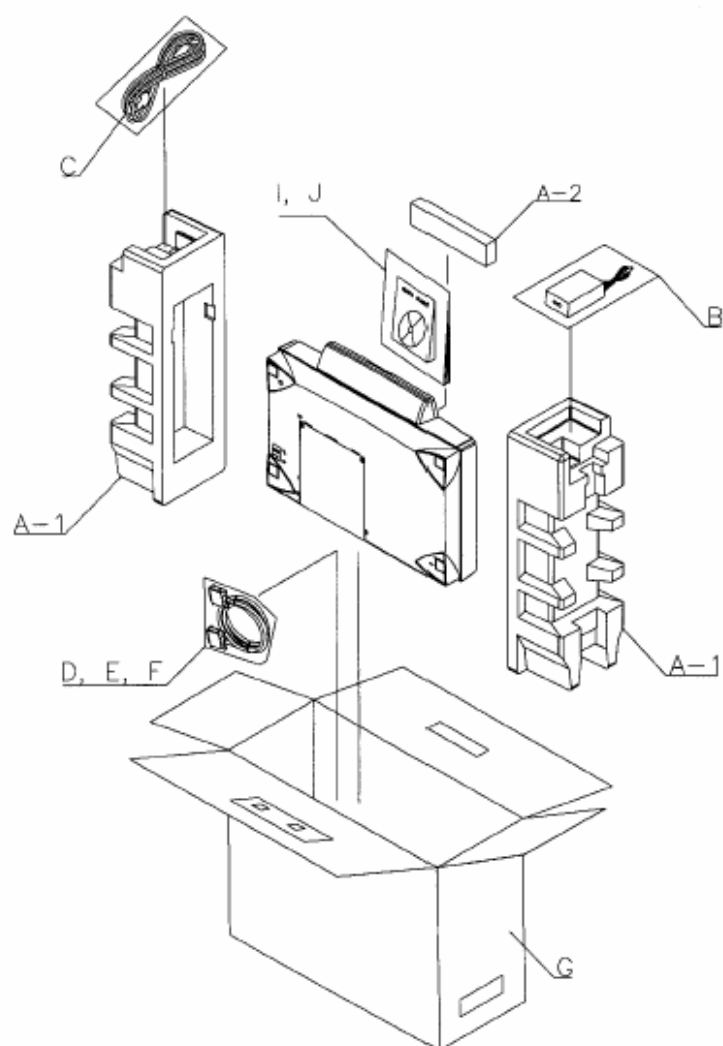
Feeding
rollers

11. PARTS

11.1 Spare Part Table

11.1 SPARE PART TABLE





11.2

Item Seq	AV P/N	REV	DESCRIPTION	ACCEPT ORDER QTY
1	002-0994-0-SP	200	S-PARTS: ASS'Y, OPTICAL, DS610CF	1
2	002-1415-0-SP	100	S-PARTS: ASS'Y, MAIN BOARD, MB155, DS610CU	1
3	004-0318-0-SP	100	S-PARTS: PCBA UI05 ScanCopier Color	1
4	003-0187-0-SP	100	S-PARTS: INVERTER, IBE12-G PCBA, 24Vdc	1
5	003-0295-0-SP	100	S-PARTS: ADAPTOR, WITH EMI CORE , DS610CF	1
6	061-0112-0	100	SPONGE: 35x10x10t	1
7	066-0078-0-SP	100	S-PARTS, MYLAR: FLEXIBLE -C, 38.4x38.3x0.5t, , DS610CF	1
8	066-0079-0-SP	100	S-PARTS, MYLAR: FLEXIBLE-B, 37.6x20.6x0.5t, , DS610CF	1
9	072-0150-0	100	EPS FOAM: 466x158x120,DS610CF	1
A	072-0153-0	100	EPS FOAM: 315x80x40, DS610CF	1
B	073-0678-0	300	CARTON: 600x170x495, DS610CF	1
C	104-0080-0-SP	100	S-PART: AC POWER CORD, USA, 2-PIN, 7A/125V, 1.8m	1
C-1	104-0077-0-SP	100	S-PARTS: AC POWER CORD(UK), 2-PIN, 2.5A/250V, 1.8m	1
C-2	104-0079-0-SP	100	S-PARTS: AC POWER CORD(CEE), 2-PIN, 2.5A/250V, 1.8m	1

Table 11.1 Spare Parts for DS610CU